preliminary

CMH40C120NH-2473

1200V SiC MOSFET

Features

- High blocking voltage with low Rds(on)
- High frequency operation with low Capacitance
- Easy to Parallel and Simple to Drive

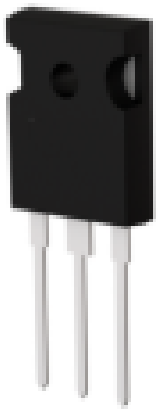
Applications

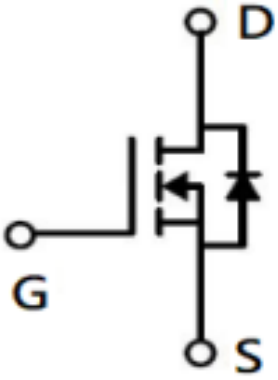
- Solar / Wind Inverters
- Switch Mode Power Supplies
- High voltage DC-DC converters
- Energy storage and Battery charging
- Pulsed Power applications

Product Summary

Item	Typical Value	Unit
V_{DS}	1200	V
$R_{DS(on)}$ @ V_{GS} =15V (Typ)	40	mΩ
I_D	55	A

TO-247-3 Pin Description





Absolute Ratings (T_A = 25℃ unless otherwise noted)

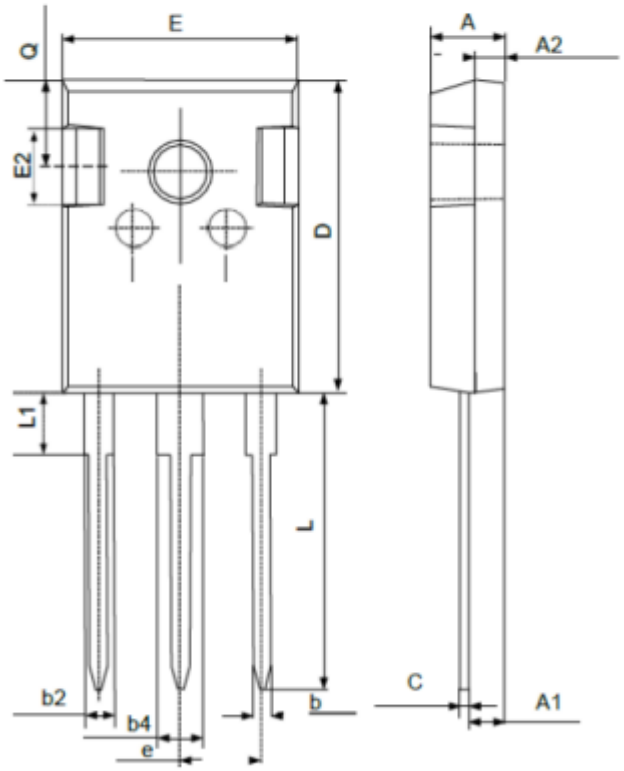
Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GS}	-4/+20	V
Continuous Drain Current	I_{DS}	55	A
Junction Temperature Maximum	T_{JMAX}	175	°C
Operating Temperature	T_{OPER}	25 to 175	°C

Electrical Characteristics (T_A = 25℃ unless otherwise noted)

Static (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 100uA	1200	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 1200V, V_{GS} = 0V	---	1	---	uA
Gate Leakage Current	I_{GSS}	V_{GS} = 20V, V_{DS} = 0V	---	---	200	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 20V, I_D = 24A	---	40	60	mΩ
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 20mA	---	2.9	---	V
Diode Forward Voltage	V_{SD}	I_S = 12A, V_{GS} = -4V	4.0	---	---	V

Dynamic (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 1000V, f = 100kHz	---	3100	---	pF
Output Capacitance	C_{oss}		---	100	---	
Reverse Transfer Capacitance	C_{rss}		---	9	---	
Turn-On Switching Energy	E_{ON}	V_{DS} = 800V, I_D = 24A, V_{GS} = -4V/18V, R_G=2.5Ω, L=120uH	---	1200	---	uJ
Turn-Off Switching Energy	E_{OFF}		---	200	---	
Total Gate Charge	Q_g	V_{DS} = 800V, I_D = 24A, V_{GS} = ±18V/0V	---	150	---	nC
Gate-Source Charge	Q_{gs}		---	30	---	
Gate-Drain Charge	Q_{gd}		---	30	---	
Turn-on delay time	$T_{d(on)}$	V_{DS} = 800V, I_D = 24A, V_{GS} = -4V/18V, R_G=2.5Ω, L=120uH	---	50	---	nS
Rise time	T_r		---	20	---	
Turn-off delay time	$T_{d(off)}$		---	45	---	
Fall time	T_f		---	10	---	
Internal gate input resistance	R_g	f=100kHz, V_{AC} = 25mV	---	1	---	Ω

TO-247 PACKAGE INFORMATION



SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	---	1.36
b2	1.91	---	2.25
b4	2.91	---	3.25
c	0.51	---	0.75
D	20.80	21.00	21.30
E	15.50	15.80	16.10
E2	4.40	5.00	5.20
e		5.44 BSC	
L	19.72	19.92	20.22
L1	---	---	4.30
Q	5.60	5.80	6.00